Washington State Conservation Commission

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Engineering Portfolio

February 2003

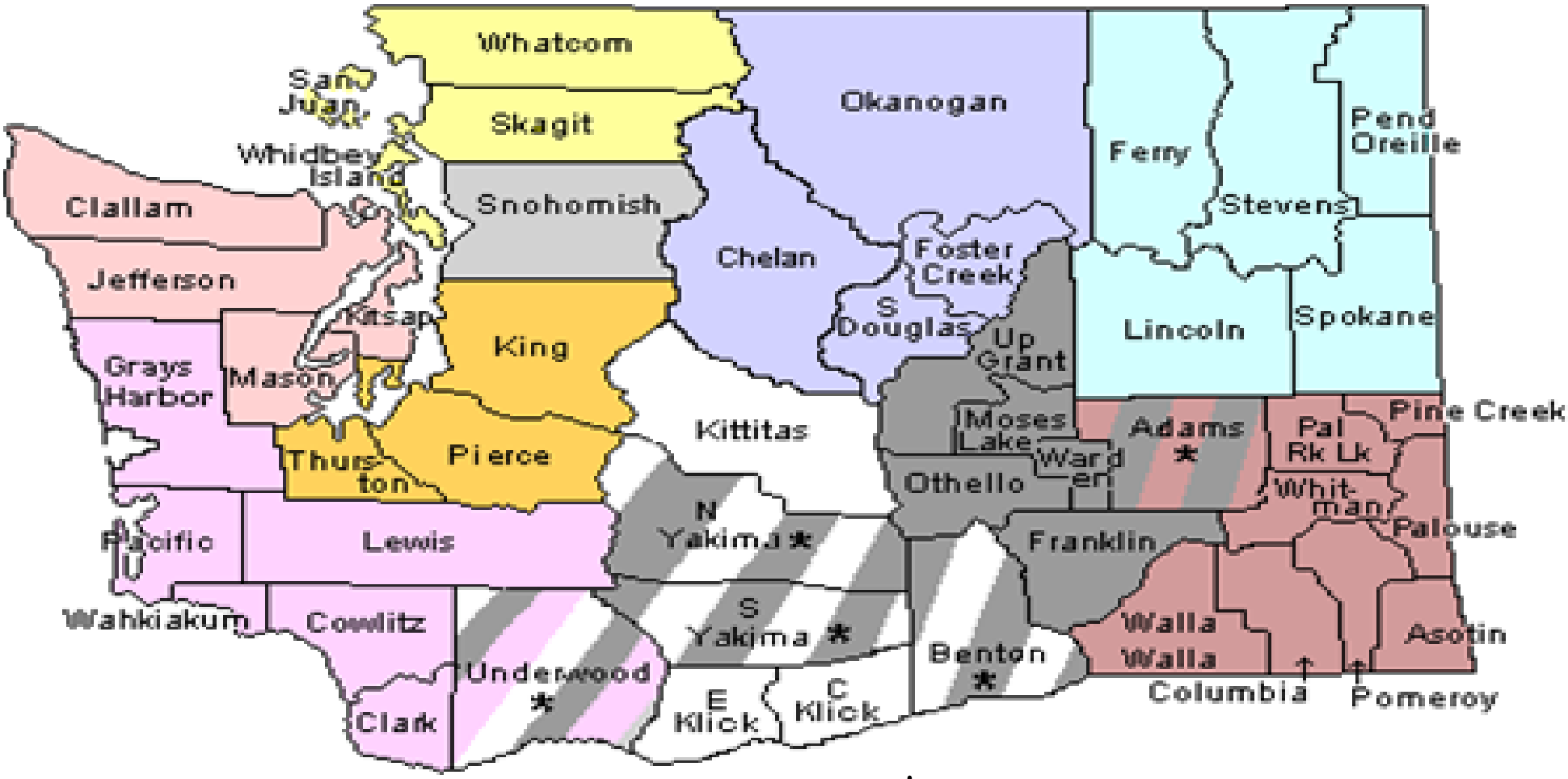
Washington State Conservation Commission

PROFFESIONAL ENGINEERING GRANTS PROGRAM

ENGINEERING PORTFOLIO INDEX

PROFESSIONAL ENGINEERING GRANT PROGRAM
ENGINEERING PORTFOLIO
Conservation Districts served by 10 cluster engineers

April 17, 2003



* District participating in more than one cluster

PROFESSIONAL ENGINEERING GRANT PROGRAM
ENGINEERING PORTFOLIO
Program Description

For the 2001-2003 Biennium the legislature provided the Conservation Commission with $1.5 million in Water Quality Funding to support the Professional Engineering Grant Program. This program provides funding to "clusters" of conservation districts that enables them to hire a professional engineer, and accomplish engineering work prioritized by each respective cluster.

Each cluster consists of several conservation districts that prioritize the time and work location for its respective engineer. Each district participating in the cluster appoints a representative to serve on a Board of Directors which has the power to prioritize the workload of the cluster engineer.

Currently the Professional Engineering Grant Program supports seven Professional Engineers who service 36 conservation districts. The remaining twelve conservation districts either "borrow" engineering from another cluster or contract out for engineering services.

PROFESSIONAL ENGINEERING GRANT PROGRAM
ENGINEERING PORTFOLIO
Report of Accomplishments
July 1, 2002 through December 31, 2002

IMPACTS	NUMBER OF SURVEYS/PRELIMINARY PLANS/COST ESTIMATES	NUMBER OF DESIGNS COMPLETED	PROJECTS OVERSEEN TO CONSTRUCTION
DAIRY	7	10	5
SMALL FARM	6		2
HABITAT RESTORATION	69	20	37
LIVESTOCK AFO/CAFO	3	1	
IRRIGATION IMPROVEMENT	13		1

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Engineering Portfolio for Ryan Bartelheimer

CD assignments

Snohomish CD
Also has worked with King CD

Education

B.S. Agricultural Engineering, Washington State University

Work Experience

Snohomish Conservation District 1994- present.
Licensed district engineer running a program to provide engineering services for soil and water conservation projects from 2000 to present. Prior to 2000, planned, designed, and implemented conservation practices under the supervision of NRCS and private PEs.

Bartelheimer Brothers, Inc. 1992 – 1994.
Assisted in running a large family-run dairy farm.

Areas of Specialization and Representative CD Projects

Small Farm Water Quality Improvement (34 designs stamped)

Before Sacrifice Area Installation

After Sacrifice Area Installation

Sample Project: *O'Neil Sacrifice Area and Outlet ($4,415 construction cost, 50% cost-share provided by Snohomish County Surface Water Management's Water Quality Improvement program)*

With other staff at Snohomish CD, planned, designed, and inspected the construction of a sacrifice area and an underground outlet system. The objective of the project was to reduce the potential for water quality problems by collecting the water from the barn roofs and outletting it in a clean, vegetated location and by creating a sacrifice area where the horses could be kept in the winter months to avoid the previous mud and manure problems. Approximate project cost: CD PE engineer: 5 hours ($234), CD non-PE engineer: 8 hours ($256), CD planner: 25 hours ($746), construction ($4,415)

Dairy Nutrient Management Plan Implementation (16 stamped designs)

Sample Project: *Misich Waste Storage Structure ($117,655 construction cost, $50,000 cost share provided through Conservation Commission's Dairy Water Quality Improvement Grant)*

Concrete Slab for Manure Storage

With other staff at Snohomish CD, designed, assisted landowner with permits, and supervised construction of 200' by 150' concrete slab designed to allow storage of solid dairy manure for duration of the non-growing season. Approximate project cost: CD PE engineer: 40 hours ($1,868), CD non PE engineer: 102 hours ($3,264), construction: ($117,655).

Sample Project: *Bueler Waste Transfer System ($2,217 construction cost, 75% cost share provided through Conservation Commission's Dairy Water Quality Improvement Grant)*

Waste Transfer System

With other staff at Snohomish CD, designed project and supervised construction of a simple, low-cost waste transfer system to collect manure runoff and divert it to the existing waste handling system. Approximate project cost: CD PE engineer: 10 hours ($467), CD non-PE engineer: 90 hours ($2,880), construction: ($2217).

Stream Habitat Restoration (9 stamped designs)

Sample Project: *Riley Slough Fish Passage Improvement ($18,701 construction cost, $10,800 paid through Centennial Clean Water Grant, $7,900 paid by Adopt-A-Stream Foundation)*

Concrete Deck Bridge

With other staff at Snohomish CD, designed, permitted, and supervised construction of the removal of a culvert and earthfill from Riley Slough, a tributary and flood refuge area of the Skykomish River and replacement with a concrete deck bridge. Approximate project cost: CD PE engineer: 60 hours ($2,803), CD non-PE engineer: 188 hours ($6,000), CD Technician: 59 hours ($1,758), construction: ($18,701).

Ryan Bartelheimer, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

	Engineer, PE	Engineer, Non-PE	Technician/ Planner
Dairy (hours)	265	390	60
Small Farm (hours)	530	770	180
Habitat Restoration (hours)	354	520	350
Training/Workshops/ Specs/other (hours)	619	100	40
Sick/Vacation/Holiday (hours)	312	300	10
Totals	2080	2080	640

Year 2 of Biennium

	Engineer, PE	Engineer, Non-PE	Technician/ Planner
Dairy (hours)	133	195	60
Small Farm (hours)	575	860	180
Habitat Restoration (hours)	400	625	350
Training/Workshops/ Specs/other (hours)	660	100	40
Sick/Vacation/Holiday (hours)	312	300	10
Totals	2080	2080	640

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Portfolio for Paul H. Cleary, P.E.

CD assignments

Benton CD
Central Klickitat CD
Eastern Klickitat CD
Kittitas County CD
North Yakima CD
South Yakima CD
Underwood CD

Education

B.S., General Engineering, University of Portland, OR
Study of hydrology through USDA with courses at University MN and MD.

Work Experience

Washington Conservation Districts. 2000- present.
District engineer providing a program for professional engineering services on projects involving protection or restoration of watershed functions.

Consulting Engineer. 1997 – 2000.
Established P.H. Cleary Civil /Hydraulic Engineering practice. Provided storm water hydrology and hydraulics for private land/property development. Provided hydrologic computer modeling to engineering firms and Conservation Districts for design of flood control works, watershed management and evaluation of conditions impacting fishery and other aquatic habitat.

USDA, Natural Resources Conservation Service (NRCS). 1966-1997
Civil/Hydraulic engineering planning watershed management and works for environmental quality, flood control and improved irrigation. Provided statewide program support and 11 watershed plans in Oregon (1989-97). Assigned to Western States (1982-89): OR, WA, ID, AZ, NM, UT and HI, to Nevada (1978-82), and in Wisconsin (1970-78). During these assignments 11 studies for flood hazard analysis and flood insurance were conducted and 22 projects for watershed and flood protection were planned. Worked as Civil/Agricultural engineer in West Central Oregon (1966-70); provided direct assistance on private land for water management.

Areas of Specialization and Representative CD Projects

Stream Habitat Restoration

Off-Channel Watering Facility

Sample Project: *Bruce Davennport / Presher Springs Creek Channel Restoration (Central Klickitat CD – WA Dept. Fish & Wildlife funded).*

Designed and supervised construction of 3,945 feet of livestock water pipeline. The project, a cooperative effort with USDA-NRCS, provided fencing of riparian areas and off-channel watering facilities. Water quality was improved by exclusion of cattle from the creek, which flows to a fish-bearing stream containing steelhead, recently listed as "Threatened." Approx. project cost: CD engineering: 565 hours ($18,640), construction: $19,000.

Water Pipeline

Riparian Enhancement

Sample Project: *Tree Top Inc./Spray-Field Riparian Enhancement (North Yakima CD – Tree Top Inc. funded).*

Designed, and supervised construction of riverbank repair along 2,100 feet of the Yakima River. The design included a 100-ft wide riparian buffer, riverbank shaping, erosion control blanketing, vegetative plantings and three J-hook structures with downstream rootwads. The project corrected erosion on bare nearly vertical riverbank providing sediment to a salmon-bearing river. Approx. project cost: CD engineering: 552 hours ($18,220), construction: $63,000.

Riverbank Shaping

Irrigation Diversion Fish Screen

Sample Project: *Morrison Ranch (Kittitas County CD)*

Designed a fish screen and relocated irrigation structure for a 1.8-cfs flow diversion with paddle wheel powered screen cleaning system. The site was selected to provide a standard screen design, typical of low head and small diversion flow sites in the county, to correct fish barrier and screening deficiency problems. Guidance for the screen design was provided by Washington Department of Fish and Wildlife. Approx. project cost: CD engineering: 305 hours ($10,065), estimated construction: $12,700.

Sample Project: *Manastash Diversion Fish Screens (Kittitas County CD)*
Designed fish screens and fish passage weirs to correct fish barrier and screening deficiency problems of six existing irrigation diversions on Manastash Creek. Engineering field surveys conducted at 5 sites. Plans partially prepared for 3 sites and plus alternative plans to allow consolidation of diversions. Approx. project cost: CD engineering: 1,631.5 hours ($53,840), estimated installation: $1,900,000.

Irrigation Conveyance Water Conservation

Sample Project: *Buena Irrigation District Irrigation Delivery System Improvement (South Yakima CD – private & State WA funds pending)*
Provided a preliminary design for an irrigation pipeline delivery system serving 85 land users on 135 small land tracts to conserve 1,600 acre-feet of water annually. The pipeline system, 4.1 miles in length, eliminates canal seepage from 5.2 miles of existing canal Approx. project cost: CD engineering: 169.5 hours ($5,595), estimated installation: $743,500.

Paul H. Cleary, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

	Engineer, PE	Engineer, Non-PE	Technician/ Planner
Habitat Restoration (hours)	760	670	250
Irrigation Diversion/ Fish Screen (hours)	660	720	240
Irrigation Conveyance/ Water Conservation (hours)	280	350	130
Training/Workshops/ Specs/other (hours)	120	100	10
Sick/Vacation/Holiday (hours)	260	240	10
Totals	2080	2080	640

Year 2 of Biennium

	Engineer, PE	Engineer, Non-PE	Technician/ Planner
Habitat Restoration (hours)	1040	820	380
Irrigation Diversion/ Fish Screen (hours)	400	540	110
Irrigation Conveyance/ Water Conservation (hours)	260	380	130
Training/Workshops/ Specs/other (hours)	120	100	10
Sick/Vacation/Holiday (hours)	260	240	10
Totals	2080	2080	640

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Portfolio for Rich Geiger, P.E.

CD assignments

Mason CD
Jefferson CD
Kitsap CD
Clallam CD

Education

B.S.C.E., Gonzaga University
M.B.A., University of Washington

Work Experience

Washington Conservation Districts. 2001 - present.
Licensed district engineer running a program providing civil engineering services for soil and water conservation and salmon restoration projects for the Olympic Peninsula Conservation Districts.

Mason County Public Works. 1994 – 2000.
Began as an Engineering Technician – EIT, progressed to Design Engineer, Office Engineering Manager, and then Road Maintenance Department Supervisor. Designed, contracted and supervised construction of several major road and bridge construction projects.

US Army 1979-1993
Served as an Army Officer in several combat units, then served in several research, development, and systems testing organizations. Attended Army Logistics Management College to study government contracting.

Areas of Specialization and Representative CD Projects

Stream Habitat and Estuary Restoration

Sample Project: *Jimmycomelately Creek Channel Relocation (DOE Clean Water Grant – BIA Grant funded, along with many other funding sources).*
Designed, contracted, and currently supervising construction of 2700 feet of new creek channel and associated floodplain to replace an aggrading channel into which the creek had been diverted, probably before 1900. The new channel design required calculation of sediment transport characteristics from the stream's valley entrance to the saltwater shoreline of Sequim Bay. The channel design also required developing a design with WSDOT for a new bridge for US 101. Also participated in estuary design to remove an abandoned log yard, manmade features, and earth fill to restore almost a mile of saltwater shoreline and over 19 acres of associated saltwater wetland. Project has the additional benefit of eliminating a significant flood hazard on US 101. Approx. project cost: CD engineering: 1458 hours ($60,769), channel construction: $500,000, bridge construction: $1,200,000, estuary construction: $1,800,000.

Concrete Bridge

Sample Project: *Spring Creek Culvert (SRFB Grant-Mason County)*
Designed, contracted and supervised construction of a 12' span by 40' wide concrete bridge to replace a 4' diameter culvert under a Mason County road. Structure was designed and built to County Road standards, and restored salmon access to over 4 linear miles of spawning and rearing habitat. Approx. project cost: CD engineering: 80 hours ($3,335), construction: $112,000.

Sample Project: *East Chimacum Creek (SRFB, Fish America, National Fish and Wildlife, and NOSC grant funded)*
Designed remeandered channel for this salmon-bearing creek, which was artificially straightened early in the 1900's. Performed survey and mapping of 2750 linear feet of stream channel and associated floodplain to develop the design. The design features creation of spawning areas, back channels for rearing and providing fish refuge during flood events. Approx. project cost: CD engineering: 120 hours ($5,000), construction: $90,000 (est.).

Structural Design for Stormwater Management BMPs

Agricultural Bridge

Sample Project: *Haxton and Harp Livestock Bridges (EQIP, SRFB, and USFWS funded)*
Designed two 20' span agricultural bridges to eliminate livestock and vehicle fords on salmon-bearing streams. Bridges were designed to accommodate livestock and heavy agricultural vehicles. These designs featured the use of simple wood decks to reduce construction costs and allow them to be easily built by conservation corps crews, while being able to carry the load of a public highway bridge. Approx. project cost: CD engineering: 103 hours ($4,295), construction cost: $30,000 for both bridges.

Feasibility Studies

Sample Project: *Sherwood Creek Railroad Bridge (SRFB funded).*
Provided engineering consultation to South Puget Sound Salmon Enhancement

Railroad Bridge

Group to determine cost feasibility of replacing two 5' diameter x 300' long culverts with a 70' span railroad bridge. Demonstrated the bridge could be built for $1.2M (vs. initial estimate of $1.8M) for a SRFB grant application. The grant was approved, and the structure was built for a final cost of $1M, well under budget, and restored salmon passage to over 20 linear miles of spawning and rearing habitat. Approx. project cost: CD engineering: 60 hours ($2500), construction cost: $1,000,000

Sample Project: *Chico Creek Watershed Restoration (SRFB grant application)*
Providing engineering consultation for the ongoing Chico Creek Watershed Restoration effort. Developed initial stream realignment, floodplain widening, and bridge replacement design to eliminate chronic flood damage and restore fish passage for endangered salmon in this urban area. This information was used to submit a SRFB grant application requesting $400,000 for design completion and construction. Approx. project cost: CD engineering: 30 hours ($1,250).

Rich Geiger, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

	Engineer, PE	Resource Tech.
Small Farm (hours)	600	2106
Habitat Restoration (hours)	912	1404
Training/Workshops/Specs/other (hours)	280	
Sick/Vacation/Holiday (hours)	288	
Totals	2080	3510

Year 2 of Biennium

	Engineer, PE	Resource Tech.
Small Farm (hours)	600	2106
Habitat Restoration (hours)	912	1404
Training/Workshops/Specs/other (hours)	280	
Sick/Vacation/Holiday (hours)	288	
Totals	2080	3510

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Portfolio for Lance Horning, P.E.

CD Assignments

Adams County CD	Asotin County CD	Columbia CD
Palouse CD	Palouse-Rock Lake CD	Pine Creek CD
Pomeroy CD	Walla Walla County CD	Whitman CD

Services Offered

Animal Waste Systems	Stock Watering Systems
Irrigation System Design	Fish Stream Enhancement
Sediment Retention Structures	Culvert Design

Education

M.S. Engineering, Washington State University
B.S. Biological Systems Engineering, Washington State University

Work Experience

Environmental Engineer. Washington Conservation Districts. 2000- present.
Providing engineering services to conservation districts, NRCS and landowners for the benefit of the local communities.

Research Associate. Washington State University. 1994 – 2000.
Conducted research to assist the Washington State Department of Ecology and the US Environmental Protection Agency in the development of air quality policy.

Engineering Technician. Washington State University. 1992-1994
Assisted with multiple research projects in cooperation with the USDA-Agricultural Research Service.

Areas of Specialization and Representative CD Projects

Pipeline & Irrigation Design

Sample Project: *Irrigation Efficiency Improvements (Columbia CD)*
Designing irrigation pipeline to replace an existing open ditch to enhance in-stream flows for fish passage. Approx. project cost to date: CD engineering: 120 hours ($5,400).

Pipeline

Sample Project: *Ledgerwood Pipeline (Pomeroy CD- CREP funded*) Designed and supervised construction of 37,000 ft. of pipeline, 3 wells and 34 troughs for the enrollment of 233 acres in CREP program. Approx. project cost: CD engineering: 120 hours ($5,400). Construction: $180,000.

Animal Waste Management Systems

Sample Project: *Feedlot improvements #1*
Designing animal waste management system to assist producer in complying with AFO/CAFO rules. System consists of water system improvements, manure storage components and development of a comprehensive nutrient management plan. Approx. project cost: CD engineering: 50 hours ($2,250).

Sample Project: *AFO/CAFO Technical Assistance*
Provided technical assistance to 15 producers (to date) on concerns they have in regards to AFO/CAFO. Assisting producers in complying with rules and regulations.

Fish Stream Improvements

Fish Habitat Enhancement

Sample Project: *Cow Camp/ Tucannon River (Columbia CD).* Designed and supervised construction of 500 feet of fish habitat enhancement. Installed bank stabilization material to a cut bank. Approx. project cost: CD engineering: 50 hours ($2,250). Construction: $35,000.

Fish Passage Barrier

Sample Project: *Lewis Creek Fish Barrier Removal (Columbia CD).*

Designed and supervised construction to remove a fish passage barrier in conjunction with a gravity diversion point. Installed grade control structures and refitted a gravity diversion. Approx. project cost: CD engineering: 55 hours ($2,500). Construction: $30,000.

Lance Horning, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

	Engineer, PE
Livestock- AFO/CAFO (hours)	640
Irrigation Improvements (hours)	300
Habitat Restoration (hours)	400
Technical Assistance (Walk-ins)	240
Administration/Training/Meetings (hours)	280
Sick/Vacation/Holiday (hours)	220
Total	2080

Year 2 of Biennium

	Engineer, PE
Livestock- AFO/CAFO (hours)	640
Irrigation Improvements (hours)	300
Habitat Restoration (hours)	400
Technical Assistance (Walk-ins)	240
Administration/Training/Meetings (hours)	280
Sick/Vacation/Holiday (hours)	220
Total	2080

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Portfolio for Russ Lawrence, P.E.

CD Assignments

Grays Harbor CD	Pacific CD	Lewis Co CD
Wahkiakum CD	Clark CD	Cowlitz CD
Underwood CD		

Areas of Specialization and Representative CD Projects

Grays Harbor CD (joined cluster 2002)

Wildcat Creek Restoration: Project mitigates cut-off of channel, restoring approximately 300 feet of lost habitat and natural function. Project Construction Cost Estimate: $9,500, Engineering: $1,400.

Pacific CD

Bridge Abutment Design: This project came to us because NRCS could not respond in a timely manner. The work consisted of designing bridge abutments and certifying the capacity of the bridge. Project Construction Cost Estimate: $8,500, Engineering: $4,700 ($3,000 structural consultant)

Fairground Drainage: The area where animals were groomed for show drained across the parking lot. The project consisted of designing a system that would capture the animal waste and wash water during the fair and drain storm water the remainder of the year. This system was successfully designed. Project Construction Cost Estimate: $6,250, Engineering: $2,600.

Consultation with USFW: Reviewed the fish passage remediation options with refuge manager.

Lewis County CD

North Fork of Newakum River Assessment: This work involved surveying approximately a half mile of the N. Fork to assess the probable results of a recent avulsion which created an approximately ¼ mile oxbow. Engineering: $865

Coal Creek Fish Passage Mitigation: The project consisted of replacing two culverts obstructing fish passage with a bottomless culvert. Six in-stream structures were also placed to prevent the stream from head cutting to relieve the difference in elevation above and below the culvert. Construction Cost Estimate: $34,500, Engineering: $4,250.

Olsen Drainage: The project consisted of meeting county storm water discharge requirements for a new barn. The problem was finally resolved

by discharging the roof run-off to a bubbler system feeding overland flow. This met the county requirements. Alternative disposal method project cost estimated at $9,500. Construction Cost Estimate: $1,500, Engineering: $2,600

Jer-Osa Organic Dairy Waste Pond This pond was under a DOE compliance order. The work consisted of negotiating a design that met the needs of the order. Construction Cost Estimate: $6,500 Engineering: $2,750

Allendar Poultry Gutters: The Allendar Poultry facility was under a storm water discharge compliance order from the county. We demonstrated the facility was in compliance with the county requirements. Construction Cost Estimate: $0 Engineering: $875

Essert Dairy Gutters: This project entailed design of a gutter system to capture, and dispose of roof run-off from a number of existing farm structures. The system was complicated, traveled (suspended) through several buildings and needed to reach two different discharge points. Construction Cost Estimate: $5,475 Engineering: $1,325.

Barnes Dairy (Randal WA): Preliminary investigation and pre-design of feed slab to roof the loafing area, remove old loafing facility and construct waste collection and disposal system, all roofed. Construction Cost Estimate: $75,000, Engineering: $4,785

Wahkiakum CD

Fossil Cr. Assessment: Fossil Creek was filled with sediment resulting from a series of upstream slides. The creek was surveyed and assessed for a prognosis of geomorphic process. The recommendation was to leave the stream alone and construct a berm several hundred feet away to prevent extension of damaging flooding. Construction Cost Estimate: $37,000 Engineering: $2,750

Grays River Bar: The CD, County and Grays River Flood Control District entered into an agreement to facilitate habitat recovery in the Grays River. This project was initiated by the Flood Control District to demonstrate action was being taken to address the problems of the River. We assisted in obtaining the necessary permits for this project. Construction Cost Estimate: $34,000 Engineering: $2,250

Grays River Bar Remediation: The project consists of assisting in grant application and designing a stable reach while improving habitat

opportunities for the endangered chum salmon run. Construction Cost Estimate: $85,000 Engineering: $8,650

Grays River Loop Rd: Loop Rd is falling into the river. A geologic report commissioned by the County indicated a total slope failure was eminent. We assisted in designing a temporary stabilization of the bank while designing a long term solution for implementation the summer of 2003. This work included substantial participation in negotiating permits. Construction Cost Estimate: $105,000 Engineering: $11,250

Grays River Assessment Grant: Assisted the Flood Control District to obtain a grant for an in depth topographic survey and geomorphic assessment of the Grays River. This assessment is needed to plan stabilization and habitat enhancement projects to facilitate the recovery of the endangered Chum Salmon run. Construction Cost Estimate: $ 126,000 Engineering: $11,500

Nikka & Thadbar Creek Fish Passage Alleviation: The project consisted of re-design of a NRCS design that could not be permitted. Potential for head cutting significant for both projects. Obtaining permits required extensive negotiation with the WDFW design section. Construction Cost Estimate: $82,000 Engineering: $7,280

Clark CD

Lockwood Creek: The project involved the removal of an artificial berm (8,000 cubic yards) and reconnection of an incised stream to a flood plain. Construction Cost Estimate: $54,000 ($20,000 donated), Engineering: $3,200

Foster Bridge: Design of a sheep crossing bridge to keep approximately 40 head of sheep from fording the creek at their pleasure. Construction Cost Estimate: $4,600, Engineering: $1,450

Culvert Issue Resolution: Provided information and data gathering support to address a culvert design failure to provide fish passage. Construction Cost Estimate: $0, Engineering: $475

Stream Survey Support: Provided stream survey equipment and support to several non-profit stream restoration projects in the county. Engineering: $3,750

Little Washougal Restoration Design: Design of restoration activities for approximately 5000 feet of the river. Design for Lower Columbia Fish

Enhancement Group. Construction Cost Estimate: $85,000, Engineering: $4,150

Fish First Project Review and Permitting Support: Support of active non-profit restoring several miles of Cedar Creek, Engineering: $3,200

Cowlitz CD

Leckler Creek. Fish Passage: Design of culvert replacement to facilitate fish passage. Down stream stabilization structures required to prevent head cutting. Construction Cost Estimate: $11,000, Engineering: $1,375

Leckler Creek Fish Passage: Survey of identified fish passage blockage, resulted in pulling undersized culvert (18") and allowing stream to naturally grade out. Construction Cost Estimate: $250, Engineering: $475

Underwood CD

Indian Creek Survey: In-depth survey of 3000 feet of Indian Cr. in preparation for possible stabilization project(s), Engineering: $2,250

Lower Wind J-Hook Project: Preliminary survey and conceptual design for slope stabilization to prevent further slides of 250 foot bank next to road. 1996 slides cost over $2 million to repair. Engineering cost Est. $105,000 Eng. (to date) $3,600

Middle Wind Survey: in depth topographic survey of 5 miles of the middle Wind River (all private ownership) in anticipation of restoration/stabilization projects. No const cost estimate. Eng. $17,650 ($15,000 from other sources)

Middle Wind Restoration Project: This project involves design, development of construction documents and construction over site for the stabilization and restoration of habitat for a 2600 foot reach of the Wind River. The project began as a UCD project. Clark CD accepted the design and permitting grant and the land owner has since stepped in to complete the implementation grants.

Hamilton Creek: The Hamilton Cr. project consists of in depth topographic survey and conceptual plan for stabilization, sediment passage and flood damage relief for this mostly seasonal stream. The stream is identified as a habitat for endangered Chum salmon. The reach under consideration runs through the community of North Bonneville. Construction Cost Estimate: $560,000, Engineering to date $1,600.

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Engineering Portfolio for Tom Slocum, P.E.

CD assignments

San Juan County CD — Skagit CD
Whatcom CD — Whidbey Island CD
Also have worked with Okanogan CD and Foster Creek CD

Education

B.A., Dartmouth College
M.S. Civil Engineering, Northeastern University
J.D., Seattle University Law School

Work Experience

Washington Conservation Districts. 2000- present.
District engineer running a program providing civil engineering services for soil and water conservation projects.

International Development Organizations. 1994 – 2000.
Worked in various positions for the United Nations Development Programme and the Asian Development Bank doing environmental engineering and environmental law projects in Bhutan, Vietnam, and Laos.

Engineering Consulting Firms 1985-1993
Environmental engineering, permitting, and project management for three private consulting firms. Work included wastewater treatment, hazardous waste management, and contaminated site cleanup at project sites across the USA.

Areas of Specialization and Representative CD Projects

Stream Habitat Restoration

Channel Restoration

Sample Project: *Van Beek / Tenmile Creek Channel Restoration (Whatcom CD–USDA EQIP funded).*
Designed, permitted, and supervised construction of 700 feet of new creek channel to replace a canary-grass clogged ditch into which the creek had historically been diverted. The channel design was based on the morphology of a less disturbed "reference reach" of a nearby creek. Approx. project cost: CD engineering: 290 hours ($13,050), construction: $15,000.

Flat Car Bridge

Sample Project: *Klein/Skiyou Slough Habitat Restoration (Skagit CD – SRFB funded).*
Designed, permitted, and supervised construction of the removal of an earth-fill causeway from a side slough of the Skagit River and replacement with a railroad flat car bridge. Designed and obtained a $350,000 grant for this SRFB project, which also included purchasing a conservation easement, installing a CREP buffer, and replacing two fish passage blockages with bridges. Approx. project cost: CD engineering: 400 hours ($18,000), construction: $40,000 to date (phase 1)

Stormwater Management BMPs

Sample Project: *Engle Farm Drainage Improvements (Whidbey Island CD)*
Designed repairs and improvements to runoff management in vicinity of silage bunkers at a dairy farm located in the Ebey's Landing National Historic Reserve. Approx. project cost: CD engineering: 70 hours ($3,150).

Sample Project: *San Juan Vineyards Drainage Improvements (San Juan County CD - USDA EQIP funded)*
Designed a system of subsurface drains to replace eroding surface ditches at a hillside vineyard. Designed a pond to store runoff for use as irrigation water. Approx. project cost: CD engineering: 60 hours ($2,700).

Wetland and Estuary Habitat Enhancement

Sample Project: *Mundt Wetland Enhancement (Skagit CD – privately funded)*
Designed, permitted, and supervised installation of wetland habitat enhancements on 3.5 acres of wet pasture. Enhancements included new pond and marsh areas and extensive planting of wetland plant species. Arranged project funding as part of off-site mitigation requirements for a private individual's development project. Approx. project cost: CD engineering: 340 hours ($15,300), construction: $25,000.

Sample Project: *Port Stanley Salt Pond Restoration Feasibility Study (San Juan County CD – USFWS grant funded)*
Designed and carried out a feasibility study to evaluate alternatives for restoring estuary habitat in a degraded salt pond on Lopez Island. Assisted CD with obtaining a US Fish and Wildlife Service grant for funding the study. Approx. project cost: CD engineering: 140 hours ($6,300).

Feasibility Studies and Permitting

Sample Project: *No-Name Slough Watershed Functions Restoration (Skagit CD – project funded by Centennial Clean Water Fund Grant)*
Designed and currently carrying-out a watershed characterization and feasibility study to identify and evaluate alternatives for managing runoff and improving fish

and wildlife habitat in a small watershed that drains into Padilla Bay. Approx. project cost: CD engineering: 100 hours ($4,500) PE grant, 300 hours ($13,500) other grants..

Placing Barb

Sample Project: *Hofman Bank Stabilization (Skagit CD – WDNR SIP funding)*
Designed, permitted, and supervised construction of a bioengineered bank stabilization project. Negotiated complex permitting requirements, including ESA consultation, WDFW HPA, and county shorelines, SEPA, and critical areas review. Approx. project cost: CD engineering: 180 hours ($8,100), construction: $18,000.

Tom Slocum, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

Type of Work	Engineering Hours
Habitat restoration	1050
Small farm BMPs and irrigation	200
Dairy and AFO BMPs	180
Walk-in/call-in TA	100
Program administration and development	270
Leave and holiday	280
Total	2080

Year 2 of Biennium

Type of Work	Engineering Hours
Habitat restoration	1050
Small Farm BMPs and irrigation	200
Dairy and AFO BMPs	180
Walk-in/call-in TA	100
Program administration and development	270
Leave and holiday	280
Total	2080

PROFESSIONAL ENGINEERING GRANTS PROGRAM

Portfolio for Mark Wasemiller, P.E.

CD assignments

South Yakima CD	Franklin CD
Benton CD	Warden CD
Moses Lake CD	Upper Grant CD
Othello CD	Underwood CD

Education

B.S. Agricultural Engineering, Washington State University

Work Experience

Washington Conservation Districts. 2000- present.
Oversee engineering program for eight conservations districts dealing mainly with dairy waste/nutrient management issues as regulated by Washington State Department of Ecology. Tasks include gathering resource inventory data, perform design calculations, development of construction and material specifications, and construction oversight of projects. These systems involve the collection, storage, and application of waste produced daily on a dairy. Components of these systems include above and below ground concrete storage structures, excavated and embanked storage lagoons, liner systems for storage lagoons (bentonite modified soil, Geosynthetic Clay Liners, other geosynthetics), and hydraulic/sprinkler systems (low and high pressure).

USDA – Natural Resources Conservation Service. 1997 – 2000.
Provided engineering services to Blue Mtn. counties of Washington State. Duties required the development and maintaining of documentation on engineering projects including streambank protection, instream fish habitat development for Walla Walla River, Tucannon River, and Touchet River watersheds. Design of road culverts to state fish passage regulations. Coordinate permitting needs for projects with city, county, state and federal agencies as required. Design of reinforced earth systems using a variety of geosynthetics including geotextiles, geogrids, geocells, etc. Oversee site construction and final inspection of all jobs. Supervise survey crews. Provide training to engineering technicians.

Westinghouse Hanford Company & IT Hanford 1989-1997
Managed projects and provided technical support to environmental restoration activities on the USDOE's Hanford Nuclear Reservation. Managed subcontractor work concerning the development of CERCLA RI/FS, RCRA RFI/CMS work plans, RCRA closure plans and Part B Permit applications, Quality Assurance Project and Program plans, summary reports, and other associated documents. Assisted in the development and negotiation with WDOE & USEPA of TMDLs on RCRA Part B Permits and Closure Plans. Performed and reviewed design calculations for groundwater treatment systems designed to treat up to 600 gpm of effluent containing volatile and semi-volatile organics, nitrates, carbon

tetrachloride, and other contaminants. Developed and implemented soil and liquid sampling plans in support of this work. Designed and/or evaluated hazardous waste landfill cover and liner systems using USEPA software. Interfaced with the EPA and Ecology personnel in relation to all projects. Developed and delivered technical presentations to management and regulatory personnel.

USDA - Soil Conservation Service 1986 – 1989
Responsible for engineering activities in Walla Walla, Benton, and Franklin counties. Designed and supervised construction of high and low pressure pipelines and water control structures for irrigation and livestock water systems with up to 5000 gpm and 60 psi delivery requirements, designed and installed solid set irrigation and drip irrigation systems for orchards, vineyards, and windbreaks. Calculated runoff hydrology on watersheds up to 2000 sq. mile drainage using computer modeling techniques. Performed wind and water soil erosion prediction calculations. Reviewed designs of fellow engineers and engineering technicians for completeness and accuracy. Instructed and supervised non-engineers performing engineering tasks. Estimated costs for all projects.

Areas of Specialization and Representative CD Projects

Dairy Waste Storage Lagoon

Waste Storage Lagoon

Sample Project: *Viewpoint Dairy (South Yakima CD – Wa. St. Cons. Comm. funded).*
Designed, permitted, and supervised construction of 3 million gallon waste storage lagoon lined with Geosynthetic Clay Liner to aid operator in controlling and storing operationswaste over winter months. Approx. project cost: CD engineering: 160 hours ($7,200), construction: $63,700).

Liner Installation for Waste Storage Lagoon

Sample Project: *Juergens Dairy (Moses Lake CD – Wa. St. Cons. Comm. Funded)*
Designed, permitted, and supervised construction of 3 million gallon waste storage lagoon lined with Geosynthetic Clay Liner to aid operator in controlling and storing operations waste over winter months. Approx. project cost: CD engineering: 220 hours ($9,900), construction: $66,700).

Manure Collection

Manure Collection Pit

Sample Project: *Rick Haak Dairy (South Yakima CD – Wa. St. Cons. Comm. funded).*
Designed, permitted, and supervised construction of manure collection pit to collect manure scraped from feed alleys for long term storage prior to field application. Structure was built in an area that showed an intermittent seasonal water table, so drainage around the structure was important.
Approx. project cost: CD engineering: 200 hours ($9,000), construction: $75,000).

Sample Project: *Jake Veldhuis Dairy (South Yakima CD – Wa. St. Cons. Comm. funded).*
Designed, permitted, and supervised construction of 2 manure collection pits to collect manure scraped from heifer replacement pens. Manure would then be loaded and transferred to longer storage.
Approx. project cost: CD engineering: 160 hours ($7,200), construction: $39,000).

Manure Collection Pit

Concrete Manure Storage Structure

Sample Project: *Robert Schmid Dairy (Underwood CD –Wa. St. Cons. Comm. Funded and landowner funded)*
Designed, permitted, and supervised construction of a large concrete manure storage structure for organic dairy. Due to size of structure, a SEPA review was required. Finished structure capable of storing 4+ months of solids. Landowner provided all of their own labor so project cost is basically materials only. Estimated cost of this structure if built by a contractor would be roughly twice as much.
Approx. project cost: CD engineering: 300 hours ($13,500, materials cost ~$175,000 of which only $50,000 was reimbursed in cost share).

Mark Wasemiller, P.E.
Projected Workload
2003-2005 Biennium

Year 1 of Biennium

	Engineer, PE
Dairy/AFO-CAFO (hours)	1500
Non-Dairy (hours)	320
Training/Workshops/Specs/other (hours)	100
Sick/Vacation/Holiday (hours)	160
Total	2080

Year 2 of Biennium

	Engineer, PE
Dairy/AFO-CAFO (hours)	1500
Non-Dairy (hours)	320
Training/Workshops/Specs/other (hours)	100
Sick/Vacation/Holiday (hours)	160
Total	2080